



Therapists' Roles in Pressure Ulcer Management in Persons With Spinal Cord Injury

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Received March 19, 2009; accepted June 28, 2009

Abstract

Background: Among veterans with spinal cord injury (SCI), severe pressure ulcers (PrU) are treated by interdisciplinary rehabilitation teams in SCI units.

Method: Cross-sectional survey administered to therapists attending a conference of the Therapy Leadership Council in SCI.

Participants: Respondents included physical therapists (PTs; n = 24) and occupational therapists (OTs; n = 15).

Main Outcome Measurements: Wound care practices as indicated by 75% or more of participants as "usual practice."

Results: In general, therapist involvement with wound care was initiated by physician order (eg, electrical stimulation) or postsurgery protocols. "Usual practice" after tissue healing included progressive range of motion; initial remobilization (first sitting after wound healing); progression of sitting time including assessment of skin tolerance; instruction in pressure relief maneuvers/techniques; and instruction in safe transfers. Practices in prevention of a new ulcer included education and evaluation of seating posture/positioning.

Conclusions: Results indicate that centers may delegate responsibilities for management of ulcers differentially by discipline. A limitation was that we were unable to determine whether these centers were the same or different for OT and PT respondents. Although sample size was small and some sites had multiple respondents, the survey showed a growing role for OTs and PTs in PrU treatment. Because 75% of each discipline reported that there were usual practices, including patient education and remobilization protocols, this area requires further study to determine the clinical outcomes in terms of preventing PrUs and recurrence.

J Spinal Cord Med. November 2009;32(5):560–567

Key Words: Spinal cord injuries; Pressure ulcers; Physical therapy; Occupational therapy; Wounds management; Outcomes; Veterans Administration

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This article presents the findings and conclusions of the authors; it does not necessarily represent the Department of Veterans Affairs, Health Services Research and Development Service or the Spinal Cord Injury Quality Enhancement Research Initiative (SCI QUERI).

Funding for this project was provided by the Department of Veterans Affairs, Quality Enhancement Research Initiative.

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INTRODUCTION

Clinical practices for preventing and managing pressure ulcers (PrUs) in the spinal cord injury (SCI) population have been defined and sustained by experiential mentored education and practice (1). Variability in clinical practices is often attributable to regional trends, academic preparation, and clinical mentorship. In the early 1990s, clinicians and epidemiologists at McMaster University in Ontario, Canada, began using the term "evidence-based medicine" (EBM) to refer to the integration of clinical experience with the best available external clinical evidence from systematic research (2). In the absence of strong empirical evidence, health care providers are forced to rely on their clinical experiences,

“what’s always been done,” dogma, and/or strongly held beliefs about the role that particular provider practices play in preventing and/or alleviating disease. To address variability in clinical practice, clinical practice guidelines (CPGs) have been developed to help health care professionals and patients make decisions about screening, prevention, or treatment of specific health conditions. This is also the case with respect to severe PrUs in the SCI population.

The identification of best practices in health care typically involves measurement, benchmarking, and identification of processes that are believed to result in better outcomes (3,4). The steps to identifying best practices include (a) identifying the benchmarked activity or product; (b) using benchmarks; (c) comparing data; and (d) establishing goals and activities to improve the desired outcome. Best practices also can be identified through a continuum of clinical trials, multisite effectiveness studies, and testing of single-setting interventions. Finally, identification of best practices can be achieved through systematically measuring similar practices across sites or facilities and carefully scrutinizing variability. The drive to identify “best practices” has arisen from the belief that everyone benefits from this process.

The Department of Veterans Affairs (VA) Health care System has been a leader in developing and implementing performance measures (5,6). The VA recently evaluated the implementation of 27 performance measures at its medical centers and, as part of its quality improvement activities, reported the results to clinical managers at each of the 23 VA network directors across the country (7). As part of its efforts to improve quality of care, the VA also instituted the Quality Enhancement Research Initiative (QUERI), which addresses several areas of concern for veterans, including SCI. QUERI’s role is to translate EBM findings into clinical practice through dissemination and implementation of findings and guidelines, development of toolkits and feedback mechanisms, and other intervention materials. QUERI’s overarching goal is to understand and address inappropriate variation in treatment and to improve patient outcomes.

Previous research has identified a large number of risk factors for developing PrUs or recurrent PrUs: (a) demographic characteristics, (b) medical conditions, (c) SCI characteristics, (d) ulcer characteristics, and (e) patient factors (8–12). In previous research, Guihan and colleagues (8,13) identified numerous areas of variability in the management of veterans with SCI and severe (stage III/IV) PrUs.

Previous studies resulted in an interest in obtaining a better understanding of current therapy practices in ulcer management (14). The purpose of this study, therefore, was to identify and report SCI therapists’ practices in the area PrU management and to assess different aspects of PrU treatment to better understand variability observed in patient outcomes. Because evidence about how best to prevent and/or treat severe PrUs in this population is

lacking, we recognized the opportunity to assess current therapy practices as a first step toward beginning to identify key components.

For a variety of reasons, rehabilitation medicine has lagged behind other areas in medicine in its use of “best practices” based on empiric evidence. Even within a setting, clinical practices may not be standardized from one provider to another because the evidence needed to develop and implement standardized practices is lacking. At present, there is limited information about what constitutes the “best” PrU management to be implemented by members of the rehabilitation team.

CPGs have been developed to encourage the development and implementation of evidence-based practices. In 1992 and 1994, the Agency for Health Care Policy and Research (AHCPR, now AHRQ) convened multidisciplinary panels to develop 2 PrU guidelines (15,16) focused on prevention and treatment of PrUs in adults. These CPGs focused primarily on provider behavior to prevent and treat PrUs in elderly and/or nursing home populations. In 2000, the Consortium for Spinal Cord Medicine published its own CPG entitled, “Pressure Ulcer Prevention and Treatment Following Spinal Cord Injury” (SCI PrU CPG), that focused on the prevention and treatment of PrU adults with SCI (17).

There are approximately a quarter of a million persons with SCI in the United States today, with almost 11,000 new injuries per year (18). Because of the lack of sensation and immobility, persons with SCI are at lifelong risk of developing PrUs. PrUs are a serious and costly complication of SCI (19,20), and Cardenas et al (21) found that PrUs were the first or second most frequently cited reason for hospitalization at 1, 5, 10, 15, and 20 years after SCI. Veterans comprise almost 12% of the SCI population. Interdisciplinary teams at 24 regional SCI Centers located in VA medical centers across the country deliver primary and specialized care, acute rehabilitation, disability management, ongoing rehabilitation, health maintenance, and lifelong health care for veterans with SCI. SCI is the most costly medical condition for veterans (an average of about \$30,000 per patient annually) and more than 50% of all VA hospital admissions for veterans with SCI are attributable to PrUs (4). The costs of caring for PrUs in veterans with SCI are substantial. In fiscal year 2005, more than 1,500 veterans treated for PrUs represented about a third of all VA SCI admissions. Veterans with SCI typically present to the health care system with severe PrUs (eg, stage III/IV) (22).

Within the VA, treatment of severe ulcers (stage III/IV) among veterans with SCI is typically provided in SCI specialty units by interdisciplinary rehabilitation teams. Occupational therapists (OTs) and physical therapists (PTs) are integral members of these teams and typically address the patient’s mobility, function, seating, positioning, and equipment issues.

The SCI PrU CPG does not define discipline-specific roles for conducting various recommended clinical assessments and interventions that fall within the OT/PT scope of practice. The SCI PrU CPG recommends that patients admitted for treatment of a stage III/IV ulcer receive an OT/PT assessment of their (a) current wheelchair and associated equipment (cushions, seating systems, etc); (b) activities of daily living; (c) upper extremity range of motion and function when on bed rest; and (d) how much time the patient spends up daily. The CPG suggests that these assessments will determine the cause of the presenting ulcer, form the basis of the provider's decision about how to treat the current PrU, and suggest how to prevent future ulcers.

No published articles describe the variability of practice roles for therapists with respect to PrU management in the United States. Despite the importance of OTs/PTs as members of interdisciplinary teams treating persons with SCI and PrUs in rehabilitation settings, there does not seem to be any published information that specifically links patient outcomes to specific therapy care processes (23). One study identifying trends in pressure ulcer management reports that seating and positioning were common interventions by Canadian OTs (24).

The objective of this study was to identify and report SCI therapists' practices in the area PrU management in the SCI population, as a first step toward understanding patient outcomes and identifying best practices for SCI therapists in PrU management.

METHODS

The survey of therapy practice patterns used for this study was developed based on the SCI PrU CPG recommendations and supplemented with the clinical and professional expertise of the second author (professor of PT/practicing PT) in the area of wound care, the Physical Therapy Normative Model (25), and the Guide to Physical Therapy Practice (26). Draft surveys were reviewed by several experts including the SCI CPG chair (an OT by training), a PT working in the area of SCI, and a public health researcher. The final version was reviewed by a number of knowledgeable colleagues, including a United Spinal Association consumer representative, a physiatrist/researcher with expertise in Model Spinal Cord Injury System (MSCIS) sponsored by National Institute on Disability and Rehabilitation Research, and the VA SCI health care systems.

The survey asked whether the respondent's professional discipline participated in any of the following aspects of wound management at the respondent's facility: direct wound care (eg, facilitation of healing), decision making concerning dressings or topical agents, determination of the causation of the presenting wound, involvement after tissue healing, and prevention of new ulcers. Each category was expanded with a check list of options or allowed an open field (the full survey is shown in Appendix A). Finally, respondents were asked about

the process for involving therapists in the care of patients with wounds.

Human Studies

Because the survey was administered to respondents without any identifying information, the Hines VA Institutional Review Board determined that the study did not require human studies approval.

Respondents

The survey was completed anonymously by the participants at an "invitation only" conference for therapists in leadership positions at their facilities (Therapy Leadership Council in Spinal Cord Injury). Most attendees were from VA SCI centers; however, individuals from MSCIS centers and private rehabilitation facilities participated as well. To validate whether the survey covered the scope of practice for therapists, a focus group interview was also conducted with interested respondents at the conference.

A total of 56 attendees participated in the 3-day conference, with 44 of them completing the survey. Five individuals (4 kinesiotherapists and 1 recreational therapist) were excluded from the analyses because they indicated lack of involvement in PrU management. The remaining 39 respondents included PTs ($n = 24$) and OTs ($n = 15$). The OT respondents represented 8 VA and 3 non-VA facilities, whereas the PT respondents represented 14 VA and 4 non-VA facilities. All of the PTs and most of the OTs (13/15) indicated involvement in wound management. The information from these 37 therapists who reported that their discipline was involved in wound management at their facility is included in this study.

As indicated earlier, one goal of the study was to use survey responses to define "usual practice." Specific activities were defined as "usual practice" when 75% of our surveyed sample indicated involvement with that particular aspect of wound/PrU management.

RESULTS

In general, therapist involvement with wound management is by consult (eg, physician order) for a specific intervention (eg, electrical stimulation) or by protocol (eg, some sites have postsurgical flap protocols that do not need specific physician orders to implement). Results indicate that it is usual practice in this sample for PT and OT to see patients' postsurgical flap. Table 1 shows the categories of wound management included in the survey where 75% of respondents indicated that this was routine practice. The authors set a benchmark of 75% as an indication of "usual practice." Usual practice by PTs for wound management in SCI included the following categories that will be expanded below: direct wound care to facilitate healing, determination of the causation of the presenting wound, interventions after tissue healing, and involvement in the prevention of a new ulcer. In contrast, usual practice by OTs does not include

Table 1. Categories of Wound Management Representing “Usual Care” by Discipline^a

	PT	OT
Direct wound care	x	
Decision making concerning dressing or topical agents		
Determination of the causation of wound	x	x
Involvement after tissue healing	x	x
Involvement in prevention of a new ulcer	x	x

^a 75% of respondents indicated that this element of care was routine practice at their site.

direct wound care to facilitate healing but does include all of the other categories listed for PT.

In Table 2, each of the categories that met the threshold of “usual practice” (75% of respondents) are expanded to show the elements by discipline.

Direct Wound Care

A majority of the PTs (75%, $n = 18$) stated they were involved in direct wound care to facilitate healing. However, direct wound care by physical therapy was not consistently defined. Only 1 item in this category, tissue mobilization, reached the threshold of 75% of those respondents reporting involvement in this aspect of wound management. More than 50% of the respondents doing direct wound care reported doing high-volt electrical stimulation. This same group of therapists also reported doing wound measurement and indicated involvement with decisions for dressings and topical agents.

Determining Causation of Presenting Wound

This aspect of wound management was found to be usual practice for both PTs and OTs. PTs consistently (20/24) stated they were involved in determining the cause of the wound but the process was not standardized. No listed procedure or evaluation was indicated by 75% of the PTs involved in this aspect of wound management. The most frequently reported therapy evaluation for determining the causation of the presenting wound was a seating evaluation (45%, 9/20), with 20% (4/20) reporting the use of pressure mapping. Evaluation of transfer techniques was reported by 40% (8/20) of PTs. PT practice in this area varied widely with the 20 therapists involved in determining causation of a presenting wound reporting 17 different categories of therapy assessments. OTs consistently (10/13) stated they were involved in this aspect of wound management, but again, the process was not standardized. No stated therapy assessment reached 75% of the OTs reporting involvement in this aspect of wound care. Indeed, the 10 OTs indicated 9 unique categories of therapy assessment. Seating evaluation was the most commonly reported,

Table 2. Elements of Usual Care by Discipline^a

	PT	OT
1. Direct wound care		
Tissue mobilization		x
2. Determination of the causation of wound	x	x
3. Involvement after tissue healing		
Progressive range of motion		x
Initial remobilization (first sitting after wound healing)	x	x
Progression of sitting time including assessment of skin tolerance		x
Instruction in pressure relief maneuvers/techniques	x	x
Instruction in safe transfers		x
4. Involvement in prevention of a new ulcer		
Procurement of new equipment to address seating needs		x
Assessment of transfer safety		x
Assessment of bathroom equipment		x
Patient education regarding skin inspection		x
Seating evaluation		x

^a 75% of respondents indicated that this element of care was routine practice at their site.

with 6/10 listing this assessment as part of the process of determining the causation of the presenting wound.

Involvement After Tissue Healing

All of the PTs and OTs reported involvement in posthealing wound management. This area of therapy involvement also seemed to be more standardized, with the following aspects of care all exceeding 75% threshold for both PTs and OTs.

Usual practice after tissue healing included progressive range of motion; initial remobilization (first sitting after wound healing); progression of sitting time including assessment of skin tolerance; instruction in pressure relief maneuvers/techniques; and instruction in safe transfers.

Involvement in Prevention of a New Ulcer

All respondents reported involvement in the prevention of a new ulcer. Usual practice for the prevention of a new ulcer included procurement of new equipment to address seating needs; assessment of transfer safety; assessment of bathroom equipment; patient education regarding skin inspection; and seating evaluation. All of the PTs and most of OTs (12/13) reported doing a seating evaluation as part of their prevention strategy.

Seating Evaluation

Because the seating evaluation figured prominently in both the determination of the cause of a pressure ulcer and the prevention of a new ulcer, we expanded the elements of the seating evaluation in Table 3. OT

Table 3. Seating Evaluation Components by Discipline^a

Seating Evaluation Components	PT	OT
Wheelchair parameter measurement	x	x
Lower extremity goniometric measurement	x	
Trunk flexibility assessment	x	x
Pressure mapping	x	x
Cushion evaluation and trials	x	x
Photographs of the individual performing a pressure relief	x	x

^a 75% of respondents indicated that this element of care was routine practice at their site.

respondents did not report measuring lower extremity passive range of motion. Otherwise, the content of seating evaluations seemed to be fairly consistent across this sample with usual practice for a seating evaluation including wheelchair parameter measurement, trunk flexibility assessment, pressure mapping, cushion evaluation, and trials and photographs of the individual performing a pressure relief. All PTs indicated that they conducted goniometric measurement of lower extremity range of motion as part of their seating evaluations.

Focus Group Feedback

Focus group participants, a subset of survey respondents, were asked to validate the findings, discuss the implications and “next steps,” and reveal problems with the interpretation of the survey. One issue brought up by participants was their concern that they often did not have early access to patients with wounds, an issue that was not addressed in the survey. In particular, they indicated a concern when patients with serious wounds were immediately put into “bedrest” status to begin the treatment process; they were more limited in their ability to evaluate the patient’s seating equipment before healing. They felt that this practice impeded their ability to intervene with appropriate equipment changes in a timely manner. Focus group participants also voiced concern that respondents may have been confused about specific survey questions. For example, because the survey did not specifically define “tissue mobilization,” they indicated that it was possible that this item could also have been interpreted as “stretching.” The focus group members thought it was important to report the differences and similarities in the 2 disciplines. Focus group participants indicated that the VA often deals with more complicated or chronic patients where the presenting ulcer is often a second or third PrU for which the patient has been treated. They also indicated that some differences in the practices might reflect case mix rather than differences in philosophy. Differences might also reflect differences in state practice acts that regulate what providers are licensed to do.

DISCUSSION

It is interesting to note that, in 2 categories, involvement after tissue healing and involvement in prevention of a new ulcer, the findings for the 2 disciplines were identical. This raises the question of whether or not there is any substantive difference between the disciplines in this posthealing phase of wound management. It also raises the questions of whether the 2 disciplines’ unique skill sets are being optimized and whether there is redundancy in care delivery in prevention and wound management by SCI therapists. It is possible that the redundancy shown here may benefit patients with PrUs by providing additional reinforcement and/or more frequent intervention. The possibility also exists that some of the overlapping of the disciplines may reflect co-treatment with both therapists present at the same intervention. We cannot know this from our survey.

One difference between disciplines was that OTs did not routinely include lower extremity goniometric evaluation as part of their usual practice for the seating evaluations. This may reflect different philosophic approaches to seating and/or to the educational curriculum of each discipline. Lower extremity range of motion limitations can significantly impact seated pressures and spinal posture and therefore are important to include in seating evaluations. Future research on the impact of best practices would have to assess the impact of seating evaluation on patient outcomes.

Limitation

Because the survey was anonymous, it is not possible to ascertain how many respondents were from the same facility or what the impact of state practice acts might have on the differences we observed. It was not possible to understand whether, within a given facility, certain aspects of PrU management are delegated to one discipline or are shared by both.

CONCLUSION

There are a wide variety of pressure ulcer management practices for physical and occupational therapists within the VA SCI centers and MSCIS centers. However, there is also consistency in both disciplines’ practice for after tissue healing and in the prevention of a new ulcer. Our analyses attempted to identify and assess areas where there was agreement across disciplines and facilities about current therapist practices in wound prevention and management. The differences we found between disciplines and facilities suggest that perhaps future research should focus on the areas in which there was variability. We plan to use the elements of usual practice identified in this study as a starting point for development of more standardized protocols for therapists to use to improve outcomes of patients with SCI treated for severe PrUs.

ACKNOWLEDGMENTS

We acknowledge the invaluable assistance of United Spinal Association, Vivian Beyda, DrPH; Laurie Elling, PT; Jacqueline Wolz, PT; Deborah Gray, PT; Joseph Berman, PT; and Elaine Rogers Fanucchi, PT.

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Therapist Survey Regarding Pressure Ulcer Prevention and Management Among SCI Patients

Please answer the following questions regarding practice at your current facility.

1. Where do you currently practice? (please list VA, Model System or other practice settings)

2. What is your discipline? ☐ 1 PT ☐ 2 OT ☐ 3 KT ☐ 4 Other _____

3. At your facility, is your discipline involved in wound care at any level? ☐ yes ☐ no
If yes, go to #4, if no, your survey is complete. Thank you.

4. Please answer yes or no to the following statements:

☐ yes ☐ no A. Therapists are involved in **direct wound care**, e.g., treatment to facilitate tissue healing.
If yes, indicate which of the following this includes (check all that apply)

- ☐ yes ☐ no Debridement
- ☐ yes ☐ no High volt electrical stimulation
- ☐ yes ☐ no Ultra sound
- ☐ yes ☐ no Other physical agent (please list) _____
- ☐ yes ☐ no Friction massage
- ☐ yes ☐ no Tissue mobilization
- ☐ yes ☐ no Wound measurement
- ☐ yes ☐ no Other (please list) _____

☐ yes ☐ no B. Therapists are involved in the **decision making concerning dressings or topical agents**.

☐ yes ☐ no C. Therapists are involved in **determining the causation of the presenting wound**.
If yes, describe what this entails:

☐ yes ☐ no D. Therapists are involved **after** tissue healing.
If yes, indicate which of the following this includes (check all that apply)

- ☐ yes ☐ no Progressive range of motion
- ☐ yes ☐ no Initial re-mobilization
- ☐ yes ☐ no Progression of sitting time including assessment of skin tolerance
- ☐ yes ☐ no Instruction of pressure relief
- ☐ yes ☐ no Instruction in transfers
- ☐ yes ☐ no Other (please list) _____

Continued on back

☐ yes ☐ no

E. Therapists are involved in **prevention** of a new ulcer.

Please indicate which of the following this includes (check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> yes <input type="checkbox"/> no | Procurement of new equipment to address seating needs |
| <input type="checkbox"/> yes <input type="checkbox"/> no | Assessment of transfer safety |
| <input type="checkbox"/> yes <input type="checkbox"/> no | Assessment of bathroom equipment |
| <input type="checkbox"/> yes <input type="checkbox"/> no | Formal patient education regarding skin health |
| <input type="checkbox"/> yes <input type="checkbox"/> no | Formal patient education regarding skin inspection |
| <input type="checkbox"/> yes <input type="checkbox"/> no | Seating evaluation |

F. If you answered yes to "seating evaluation" indicate which features are included in the seating evaluation (check all that apply).

- | | |
|--|---|
| <input type="checkbox"/> yes <input type="checkbox"/> no | Wheelchair parameter measurement |
| <input type="checkbox"/> yes <input type="checkbox"/> no | Lower extremity (LE) goniometric measurement |
| <input type="checkbox"/> yes <input type="checkbox"/> no | Body measurement |
| <input type="checkbox"/> yes <input type="checkbox"/> no | Trunk flexibility |
| <input type="checkbox"/> yes <input type="checkbox"/> no | Pressure mapping (Describe system used) |
| <input type="checkbox"/> yes <input type="checkbox"/> no | Cushion evaluation and trials |
| <input type="checkbox"/> yes <input type="checkbox"/> no | Photographs of person in seating position |
| <input type="checkbox"/> yes <input type="checkbox"/> no | Photographs of person performing a weight shift |

5. Are therapists involved in providing care to **all wound patients** or only some? (check what applies)

- ☐ All wound care patients.
- ☐ Some wound care patients (please describe). _____

6. Is there any category(ies) of patient always seen by therapy for pressure ulcer-related treatment or prevention, e.g., post-flap surgery?

- ☐ All patients post pressure ulcer surgery (flap or other?)
- ☐ All patients regardless of severity of pressure ulcer
- ☐ All ages
- ☐ All patients who had prior pressure ulcers
- ☐ All patients with their first pressure ulcer
- ☐ Other (please specify) _____

7. Does your site have a post-flap mobilization protocol? ☐ yes ☐ no

If yes, what is your role in the protocol?

8. Does your site have a mobilization protocol for wounds healed without surgery? ☐ yes ☐ no

If yes, what is your discipline's role in this in this protocol?

Respondent Information

Gender ☐ Male ☐ Female Age: _____

Primary practice setting (greater than 50%) time:(Check all that apply) ☐ Inpatient ☐ Outpatient

☐ Home Care ☐ Academic/research ☐ Other (please describe) _____

Thank You!